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THE STORY OF PAN CHEWING IN INDIA

BY

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INTRODUCTION

“There are so many ways of doing everything, all over India.” This is particularly true of pan or betel chewing, not only in India, but in all the Eastern countries where pan has entwined the culture and conventions of the people. Even the name pan has acquired a new connotation in India. It originally meant betel leaf. In modern writings and usage, however, pan refers to both betel nut and betel leaf; thus in Hindustani *pan dena* means the custom of giving betel nut and betel leaf, and in South India *tambula kodi* conveys the same meaning. The origin of its use fades into antiquity and is lost in the dim past of the prehistoric periods.

The chief constituents of pan are betel nut, betel leaf and quicklime, the inevitable three apices of the pan triangle; Forster calls them “pan’s trinity.” The other materials used with them are merely ingredients.

The use of pan, a civility, a hospitality, a convention, a habit, and an innocent after-meal breath-sweetening practice, has often been treated in sweeping generalizations based on partial and imperfect facts. A practice and habit that involves over one third of the human race,

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in India, Burma, Ceylon, Malaya, Indonesia, the Philippines, the Pacific Islands as far as Fiji and the Marquesas, China, Indo-China, Siam, East Africa, Arabia and Persia, and is so intimately interwoven with millions of individuals from birth to death, in joy and sorrow, in respect and contempt, in friendship and enmity, and in challenge and honour, must be looked into from all angles.

Leaving aside the botanical and chemical analysis of betel nut and betel leaf and the works of early writers, the opinion expressed or written about pan by many recent European writers has not been wholly true; the custom has been exaggerated or represented as something abhorrent to Westerners. The reasons for these sweeping generalizations, based on partial or imperfect facts, that impressed me most on going through many of these writings about pan are: (1) unfamiliarity with the use of pan in any form; (2) judging with the preconceived idea that anything the East does is something strange, curious, mystic, or bound up with religion; (3) lack of knowledge of the background of the culture of the people and their food. Any one of these would be sufficient to colour the author's conclusions.

The reasons for the use of pan are lost in antiquity; one's own ideas are as good as any others. In the East, it is said to be because of the carminative effect, to keep the gums and teeth strong, to aid digestion, to sweeten the breath, or for something to chew after meals, or a good practice by which to circumvent narcotic temptation. One of the very early writings, the Indian "Hito-pades" (friendly advices), notes about thirteen properties of pan; it removes bad odour; it expels phlegm; it expels flatulence; it expels worms; it beautifies the mouth; it helps digestion; it is sour; it is bitter; it is heating; it is sweet; it is salt; it is astringent; and it excites de-

sire. Marco Polo speaks of it as "salutary." One reason that strikes me is this: coffee was introduced into India only about 200 years ago, and tea might have been a little earlier; but even now tea and coffee do not form a part of all meals. Lunch or dinner or feast meals are ended in many cases with curds, buttermilk, milk or sweets. In all cases, however tasty or flavoured the food may be, the food or beverage taste is gotten rid of from the mouth after the mouth is washed. It is generally after the meal and mouth-wash that pan or a piece of nut, or a mixture of nuts is used to sweeten the breath. This habit of the aftermeal use of pan or a piece of nut is the most common practice that one comes across in India. Garcia da Orta noticed this practice about 400 years ago. "Among these people [Indians] it is so detested to smell bad." "Everyone chews it [pan] after meals." "Many Portuguese say that when they eat fish, they alternate it with betel." Forster writes, "their [pan chewer's] breath is sweet; they are the exact antithesis of Italians, and crowd for crowd I would rather be with them [pan chewers]."

In all cases of pan chewing up to the beginning of the 17th century, and in the majority of cases now, the pan was and is used to eat and swallow for its acquired taste, and the colour in the mouth is rinsable, leaving no stain on the teeth after washing.

After tobacco was introduced into India by the Portuguese somewhere in the 16th century¹ and its use in

¹ Baber in his *Memoirs* for 1519-1525, describing all the useful plants and animals of India, makes no reference to tobacco. Garcia da Orta lived in India from 1534 to 1564, and in his classical works on *Drugs and Simples of India*, makes no mention of tobacco. "Doubtless to the Portuguese is due the credit of having conveyed both the plant and the knowledge of its properties to India and China. It is said in the *Dara-shikohi* that they had conveyed it [tobacco] to the Deccan as early as 1508" (Watts). Asad Beg, in 1605, found some tobacco

India and China became widespread during the 17th century, a new form of pan chewing developed, that is, chewing betel nut and betel leaf with lime and tobacco, but only to keep it in the mouth for its effect. Nothing is swallowed or eaten in this type of chewing; the red saliva is spit out as often as it collects in the mouth; the mass of chewed pan with tobacco remains in the mouth; finally, when the tobacco loses its effect, the whole mass is spit out. This detestable habit of chewing has been described as causing "the ghastly marks one commonly sees in the streets." The blackening of teeth is mostly noticed among this class of pan chewers due to their negligence in cleaning their teeth. In this method, the pan is only an accessory or an accomplice to the tobacco habit. All the low grade nuts and leaves are used up by this class of chewers; the spicy and aromatic ingredients used by the majority of chewers for taste are not used by those who chew pan for the tobacco habit. Before tobacco introduction, chewing was entirely to eat and swallow, and spitting was rare, and even those who used kath, spit out only the first saliva, if any; the rest was chewed and eaten. Garcia da Orta has noticed this: "They spit out the first juice . . . some persons do not do this but chew it all and afterwards take other leaves in the same way."

Out of about 30 plant products which are used in some form or other in chewing pan, only the betel nut (with the exception of tobacco) contains alkaloids. There are several of these, the most active principle being arecoline $C_6H_{11}O_2N$ (about 0.1%). Besides alkaloids, the nut contains: Moisture: 31.3%; Proteins: 4.9%; Fats: 4.4%; Carbohydrates: 47.2%; Minerals: 1.0%; Cal-

in Bijapur and took it to the Emperor Akbar who attempted to smoke." . . . Comes affirms that the seed cultivated in India in 1605 had been brought from Brasil." (Watts)

cium: 0.05% ; Phosphorus: 0.13% ; and a trace of Iron: 0.5 mg. per 100. Cured nuts are considered to be of the highest quality. The curing improves the colour and taste and removes the excess of tannin and mucilage in the nut. Raw nuts contain 21.6 to 30.2% of tannin, whereas cured nuts only have 8.6 to 15.1%. Cured nuts are more commonly used in southern India than in northern India.

The betel palm and vine have been variously described in Indian literature; the areca palm has been called "an arrow from heaven"; and poets have often symbolized the palm and vine for enduring strength and beauty.

HISTORY, BOTANY AND CULTIVATION

a. Betel Palm: *Areca Catechu* L.

The genus name *Areca* is of South Indian origin. Among the Nairs, *Areca* means "cavalier." In Kannada¹ the betel palm is called the *Adike* tree, the nut *Adike*. The specific epithet *Catechu* is probably from *Kachu* meaning in Kannada "astringent substance."

The original home of the betel nut palm is uncertain, as it is so widely cultivated in all the tropical parts of Asia and in all the islands of the Indian and North and South Pacific Oceans (see map). It has as many distinct names as there are languages in the East. It is not found wild anywhere in any of the countries of its cultivation. Its numerous varieties, the many distinct names, and the lack of wild individuals all indicate its antiquity, but do not solve its origin. Several different opinions have been expressed by botanists as to the original home of the betel palm: Martius is uncertain, but thinks it is probably native to the Sunda Isles; Blume, Bretschneider and Ridley consider it to be Malayan; Miquel and Blanco

¹ Kannada is one of the major languages of South India. I am not sure which is the older term, i.e., whether *Areca* is derived from *Adike* or vice versa.

EXPLANATION OF THE ILLUSTRATION

PLATE XLV. A fruiting branch of the betel palm (*Areca Catechu* L.) showing some of the fruits or nuts in section. Betel nuts are one of the chief ingredients of pan or betel chew.

From a painting by BLANCHE AMES.



do not seem to agree with them. Blatter claimed to have received a letter from Fischer stating that he found in the Attapadi Valley of Malabar, South India, the areca palms growing wild in dense evergreen virgin forests. Beccari's reasoning seems to be more plausible; he considers that *Areca Catechu* var. *silvatica* is very closely related to the cultivated palm, and this variety is found wild only in the Philippines, and nowhere else. In addition to this variety, there are many *Areca* species found wild in the Philippines which closely resemble the cultivated plant. On these evidences, he thinks, the cultivated species probably originated in the Philippines.

The betel palm is a slender and graceful tree with a strong columnar stem surmounted by a crown of pinnate leaves. The straight, cylindrical, greyish trunk attains a height of over sixty feet. From base to crown it tapers imperceptibly and bears regular, faint rings of scars of fallen leaves. The leaves are four to six feet long; the lower portions of the petiole expand into a broad sheath and cover the stem before falling off. The upper young pinnae are confluent and stick out straight in the center of the crown. The inflorescences are found on the stem below the leaves, in the axes of old-fallen leaves; the inflorescence is a spadix enclosed in a spathe and consists of a much branched rachis bearing male and female flowers. The fruit is ovoid or oblong according to the variety, about the size of an egg, two inches thick and two and a half inches long. Before ripening, the fruits are lustrous green; when quite ripe, they turn to orange-yellow. The pericarp is fibrous and husky. The seed, or kernel, consisting of hemicellulose endosperm, is the "nut" used for mastication. The tiny embryo at one end of the nut drops off on drying or during the process of cooking. The uncured (uncooked) nut is greyish brown in colour, and when cut, shows reddish brown lines of albumen.

There are numerous varieties and many nuts of quality are known by local names and fames all over India.

The betel palms are cultivated in pure-stand plantations or in mixed gardens along with coconut palms, bananas, oranges, limes, mangos, guavas, and numerous other side plants of economic importance. It is a maritime palm, and requires a tropical climate for luxurious growth. Its requirements are more or less the same as in the case of the coconut, but it is very sensitive to drought. In the tropics it grows well where there is a heavy rainfall or under irrigation; it requires shade in its early stages. It grows in a variety of soils from the laterite soils of the west coast of India and Ceylon, through Deccan along the east coast, to the alluvial soils of Bengal and Assam, extending to Burma, Siam, Indo-China, China and the islands of the North and South Pacific Oceans.

Seedlings are raised in shady nurseries and transplanted at an age of two or three years; seeds are also sown directly by dibbling the seeds in holes about 6-8 feet apart. In Bengal, the first row of seeds is dibbled under the shade of *Erythrina indica* (the latter put in rows as cuttings at 12-15 feet apart) and when the palms begin to bear, the *Erythrina* plants are cut off and in their place, and under the shade of the older palms, new rows of seeds are dibbled. Bearing begins when the palms are about 7-10 years old, but the plantation comes to full bearing when it is about 15-20 years old and continues to yield for from 30 to 60 years. The palms live over 100 years under good soil and cultivation.

b. Betel Vine: *Piper Betle* L.

The generic name *Piper* is probably a derivative from the Sanskrit word *Pippali* for pepper. The name betel (betle), meaning "simple leaf," seems to come from *betre*

from the Malayalam language in South India. As in the case of the betel palm, the betel vine has distinct names in the various Indian languages. The betel vine, or pan as it is sometimes called, is considered to be, probably, a native of Java. Some even consider it to be indigenous to South India, Ceylon and Malaya. Marco Polo, in his travels, had seen betel leaves in Madras. Ibn Batula has described both the betel nut and betel leaves; of the latter he writes: "a plant that grows like a grape vine. It is trained over a trellis of canes like a vine or plants near the coconut palm, where it clammers up like a vine or pepper. It does not bear fruit; but it is the leaves which are used and they are like those of the Bramble." It is extensively cultivated in India, Ceylon and Malaya. Marco Polo mentions this leaf: "that people of India have a habit of keeping in the mouth a certain leaf called Tembul." (The Sanskrit name is *Tambul*; the Kannada name *Tambula*.) And he further comments: "that the rich people and the King have these leaves prepared with camphor and other aromatic spices, and quicklime." Many other European travellers and others have noted the use of betel leaf. Garcia da Orta has discussed the use of pan in detail. "That Indians are in the habit of keeping the nail of the right thumb pointed and sharp, in order to remove the mid-rib of the leaf." The leaves are used in the green and tender state.

The betel vine, a pepper, is an evergreen perennial, twining on living supports—areca palms, species of *Erythrina*, *Sesbania*, etc. It has a heart-shaped, simple, exstipulate leaf, light green to deep green in colour, with five to seven dorsally well marked veins.

Among the horticultural and agricultural plants which need human care, the most cared for and the one which is given the most delicate attention, is this vine. No other plant seems to have so much tender and considerate

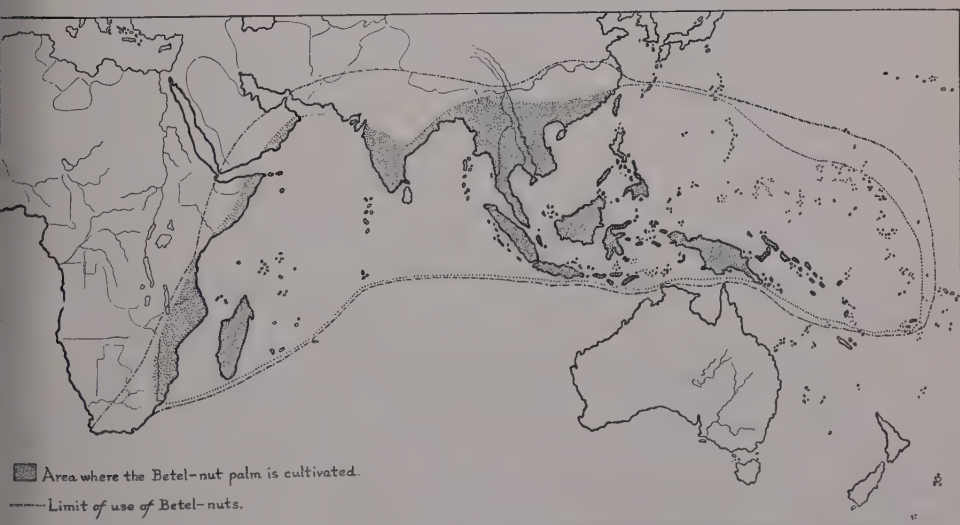
EXPLANATION OF THE ILLUSTRATION

PLATE XLVI. (Upper figure). Different types of beeda, the commercial form of ready-made betel chew. *Left*, northern India; *center*, Philippine Islands; *right*, Siam.

From a painting by BLANCHE AMES.

(Lower figure). Map showing the area of cultivation of the betel palm, and the distribution of the betel-chewing habit.

PLATE XLVI



attention by the cultivator. A worker in the vineyard often reminds one of a servant in a palace, too careful to spoil anything. For the successful growing of this vine, one must need to have perfect knowledge of its requirements — adequate wind breaks, protective shade with diffused light, perfect supports, rich and well-drained humus soil, fairly constant temperature with a uniform amount of moisture and regular manuring at intervals. In some parts of India the vine is grown in specially constructed houses of grass, reeds and mats, having flat grass roofs so arranged as to admit diffused light.

As in the case of the betel nuts, there are numerous, localized varieties of leaf; and in some details the cultivation varies from place to place. The vine is rarely grown by the consumer, as it requires expert knowledge; hence in India, the betel leaves travel long distances from the cultivators to the consumers, i.e., to towns and cities.

HARVEST AND PREPARATIONS

a. Betel Nuts

The period from flowering to fruit ready to be harvested is nine to ten months. Flowering commonly occurs throughout the year. The harvesting periods in India begin in August and run up to the following January, the peak periods occurring mostly from October to November.

For curing purposes, the fruits are collected just before they are quite ripe. When one or two fruits in a bunch begin to turn orange-yellow, the bunch is cut off and the fruits are gathered. For raw nuts, all the fruits are allowed to ripen to an orange-yellow colour.

The harvesting process is of interest. Special tree climbers are employed for gathering the fruits. These are the artisans of tree climbing. The climber uses a two

to two and a half foot rope or banana fiber. This rope or plantain fiber is tied together at the ends and twisted into somewhat the shape of a figure eight in a horizontal position. The climber places a foot in each loop; the free ends of his feet with his toes and the twisted middle portion of the rope serve to clasp the cylindrical stem like a clip. He first holds the stem with his hands, clasping the stem at his chest level, and pulls his legs up with the looped rope in his feet; at this level, he clasps the stem with his feet and the rope, releases the hold of the hands and pulls the whole length of the body up; then again holds the stem with his hands, releases the hold of the feet and pulls the legs up. These alternating holds and pulls each time cover over two to three feet of the stem. The climbers are so brisk and agile, that in seconds they will be at the crown of the tree of sixty to eighty feet in height. They go from tree to tree by swinging and catching the next tree, as the areca palms are slender and flexible, until the day's harvest is completed and without climbing down. It is easy to take a swing, if one is bold enough, on an areca palm, but it is not possible on coconut palms as they are not slender and flexible. Once on the tree, the climber knows by experience which branch to cut and which not to cut. He removes the bunch and allows it to drop on the ground. The bunches are then collected. Often if there is thick vegetation below, the branches are caught in nets or lowered down by means of a rope.

Semi-ripe fruits, that is, fruits to be used for curing, are easy to husk. The pericarp is cut into halves without bruising the seed and this is done by means of sickles or special sharp blades fixed into a plank. One end of the fruit is pushed against the blade, and when the blade enters half way into the pericarp, and before it reaches the seed, the fruit is pushed sideways which splits the

pericarp into two parts and the seed drops out. This shelling is done when the fruits are fresh and before they dry up.

The curing process consists of boiling or cooking the seeds. The shelled seeds are placed in copper or earthen vessels with enough water to cover the seeds. For the first charge, a small quantity of the previous year's extraction, a decoction called *chongaru*, is added; or in the absence of *chongaru*, a few pieces of the fresh bark of *Syzygium Cumini*, *Pterocarpus santalinus*, *Ficus religiosa*, or other trees. Nobody seems to have considered why these barks or *chongaru* are added to the first charge. They may be likened to catalytic agents in chemical reactions, and I suppose they are added to aid the tannin reaction and the release of the same in the process of cooking. In some cases a small quantity of sesame oil is added. The charge is then heated to the boiling point. The seeds are boiled until the tiny embryo drops out and then they are removed by means of perforated ladles and are dried for about a week. There are various modifications in this process of cooking. Unhusked fruits may be boiled and then husked, sliced and dried; or the seeds after husking may be cut into halves and cured, or sliced into smaller pieces and then cured. Sometimes various spices and jaggary are added during the boiling process to increase the taste and aroma of the nuts. "Occasionally the kernels are reboiled in milk to cater to fastidious tastes."

After three or four charges have been boiled in the same decoction, the extract becomes semi-liquid; on drying, this becomes a solid substance which is sold as *kath* (cutch).

Seeds which are left whole during drying are called *unde-adike*; the ones that are cut into cup-shaped halves and dried are called *battalu adike*; those that are cut

into smaller pieces and dried are called *churu-adike*, or *lavanga-churu*. Thus the nuts are sold under different names which vary according to whether they are uncut whole nuts, or are cut into halves, or into smaller pieces. This curing or cooking process is practiced throughout India, particularly in Mysore and other parts of south India.

The preparation of raw nuts in other nut-growing countries is the same as in India.

Malaya produces four kinds of nuts: 1, whole nuts. 2, split nuts. 3, sliced nuts and 4, smoked nuts, and also salted nuts in small quantities. Briefly some of the methods followed in Malaya are as follows:

Pinang kossi. Ripe fruits are dried in heaps with occasional turning for about three months before husking; after husking, the seeds are dried again for two or three days before packing and marketing.

Pinang blah. Ripe fruits are split into halves and dried with the split sides uppermost for two or three days. After the husk is removed, the seeds are dried again for two or three days before marketing.

Pinang salai (smoked nuts). The smoking process is done in a specially constructed mud oven with bamboo gratings. The ripe fruits are placed on top of the bamboo gratings and a fire is developed inside the oven with dry betel-nut husks, the smoke of which escapes through the mass of fruits; this smoke continues for about a week before the fruits are taken out. They are then husked and the seeds are dried for two to three days before marketing.

Pinang asin. Semi-ripe green fruits are mixed with salt and stored in sacks for two to three months before husking. The fruits are then husked and the seeds dried for two to three days before marketing.

b. Betel Leaf

Betel leaves are harvested throughout the year in rotation, as the vine is evergreen and perennial. The leaves are generally picked in the morning. They are picked with at least one half inch of the petiole attached to the leaf. Then these leaves are serially arranged one above the other, the ventral surface of one lying on the dorsal surface of the other and the petioles touching side by side. Counting of the regularly arranged petioles is the method adopted to count the number of leaves. The leaves are counted in 20's, 100's and 500's. In this arrangement the leaves, alternating with banana or plantain leaves, are packed into ball-shaped or barrel-shaped large bundles, an operation which requires experienced hands. Thus packed, they can withstand any amount of handling and any distance of travelling. These artfully packed leaves often travel long distances from the place of cultivation to towns and cities, often on head loads, on busses or in trains.

Besides supplying city and town markets, the betel leaves are sold in the interior parts of India on a barter system. Venders (usually women) carry leaves to each village on alternate days or twice a week, and cater to the village families and collect grains during harvesting seasons.

OTHER INGREDIENTS

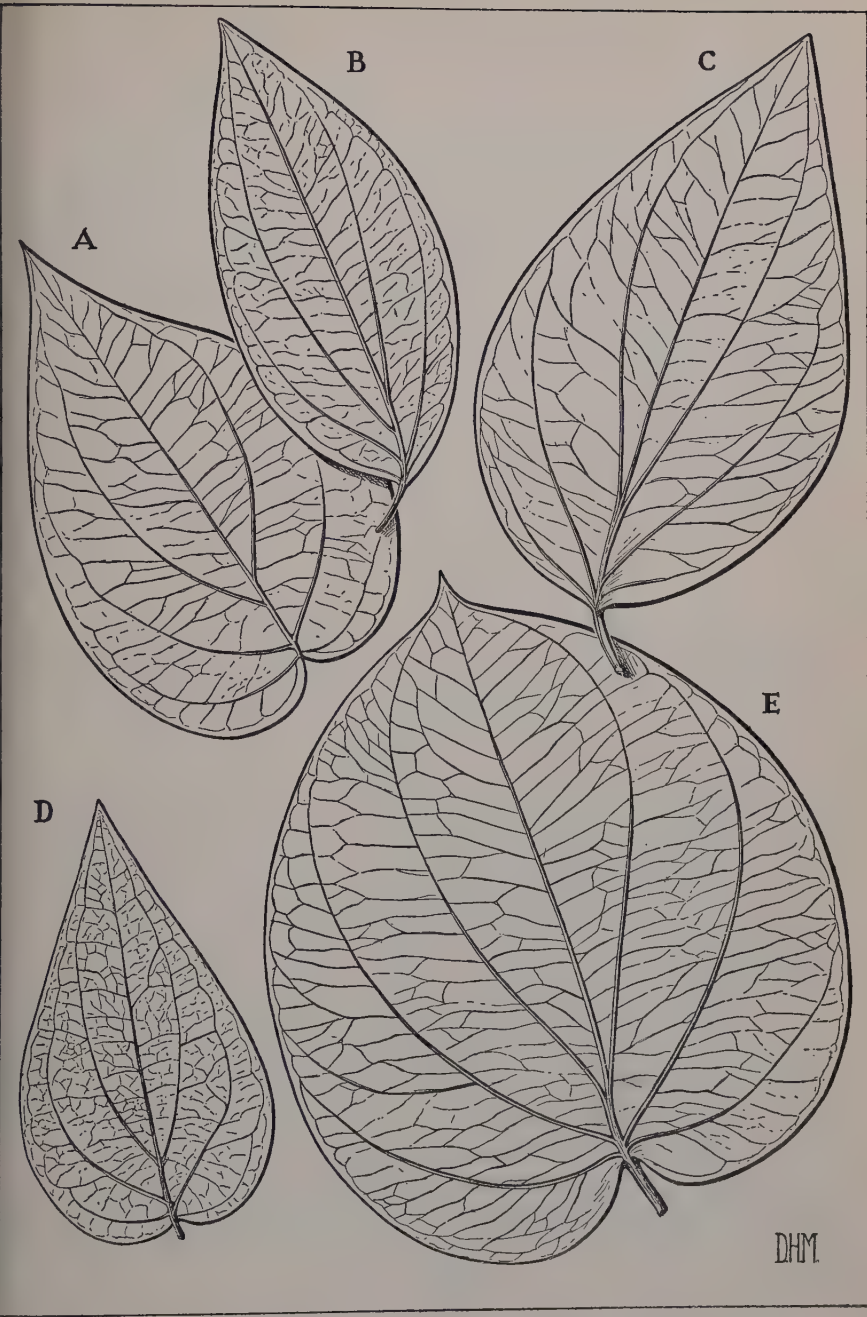
a. Kath (cutch)

There are several types :

1. Kath from *Acacia Catechu* wood (pale catechu). This is the crystalline substance prepared from a concentrated decoction of *Areca Catechu* wood. The chipped wood of this plant is boiled in water to concentration and the decoction is then cooled to get the crystalline

EXPLANATION OF THE ILLUSTRATION

PLATE XLVII. Leaves of the betel pepper (*Piper Betle* L.), the second of the principal ingredients of betel chew, obtained in various Asiatic markets, and showing variation in shape. A and D, Manila, Philippine Islands; B and C, Bombay, India; E, Bangkok, Siam.



thick brown substance which is cut into blocks and sold as kath by druggists. These cubes or blocks are redissolved in hot water and cooled into a semi-liquid for use with pan; or the cubes are cut into small pieces and used as such.

2. Kath, white kath, or gambier, from *Uncaria Gambir*. The leaves and twigs are boiled in water and the concentrated decoction is then cooled to get a crystalline substance. This is cut into cubes or blocks and sold in the market. The cubes are redissolved in water into a semi-liquid for use with pan.

3. Kath from *Areca Catechu* seeds. As already described under nut-curing, a semi-liquid is obtained by boiling several charges of seeds. This *chongaru*, on drying, can be cut into blocks or cubes to be sold as kath.

b. Tobacco

There are various preparations of tobacco for use with pan. The tobacco used is a strong-smelling country-cured tobacco with each leaf pressed into a sticklike form. It comes to the market in small bundles.

1. *Khaina*. A thin layer of lime is applied to the left palm and the chewing tobacco is rubbed and pressed with the right-hand thumb which has also a thin layer of lime. This pressed lime-tobacco is then placed in the mouth over the chewed pan. This limed tobacco is called *khaina*.

2. *Jharada*. This is tobacco chewed with pan and other ingredients and is used mostly in northern India.

3. *Tombacu*. In Hindustani, *tombacu* means tobacco. The country-cured tobacco is powdered and moistened with gur (jaggary) dissolved in water. It is variously pressed and often is made into grain-like form for use in

the pan. It is frequently covered with gold or silver leaf, and is the most expensive form of tobacco.

4. *Kaddipudi*. This is the cheapest form of tobacco. It consists mainly of the stalks and the petioles of tobacco plants. These sticky parts of the plants are crushed into a coarse powder (*kaddipudi* means powdered-sticks), processed with jaggary and water, and pressed into bricks or blocks and sold in the market.

5. *Gundi*. This is a mixture of country-cured tobacco, coriander seeds and other spices. The tobacco is powdered and fried; coriander seeds, and other spices, are each fried until they have the correct smell and are then coarsely powdered and mixed; finally the whole mixture is scented with a resinous oil called *chua*; *gundi* is known as *kadapan* in Orissa and Bengal.

c. Amber and lime

Amber. Amber is a fossil resin, but the term is also loosely applied to many resins from living plants. It is used to give an aromatic smell to pan.

Lime (quicklime). Originally lime for use in pan was made from burned shells; but now it comes from burned limestone; i.e., from calcium carbonate. Calcium carbonate is burned in special kilns, and is converted to calcium oxide. On the addition of water, this calcium oxide is changed to calcium hydroxide, which is known merely as lime or quicklime, and is used in pan. Precaution is always taken not to dry the lime completely in the open atmosphere, as it will be partially reconverted to calcium carbonate and become hard. Often the lime is variously scented with camphor, or colored with saffron, and bottled for sale. However, the plain lime is the form found to be in most use. Each family buys its own stones and prepares its own lime. The pan chewers carry their lime

in small metal containers or in small glass containers called *sunnadu-dabbi* (lime-container).

The purpose of using lime with the leaf is to neutralize the burning and stinging acidity in the leaf. A leaf taken without lime burns the mouth, and one gets a terrible stinging sensation. That is why, knowingly or unknowingly, the pan chewers always use lime and smear the leaf with it before placing it in the mouth. If an excess of lime is used, the effect would be the same, as the lime will also burn the mouth. This is one precaution, not to take a leaf without lime and not to use an excess of lime, which the pan chewer knows by experience. Generally the amount of lime applied to the leaf is very small.

UTILIZATION OF PAN

a. Non-habitual chewing

In this type of chewing the pan is eaten entirely for the carminative and salutary effect. Four different methods are used.

1. Pan trinity. Used either plain or with ingredients (*masala*), this is the simplest form of pan. It varies depending on a liking for astringency or sweetness. For astringency, raw nuts are used; for sweetness, cured nuts. The nuts are first placed in the mouth. While they are softening, the leaves are cleaned, and the lime is applied to them. They are then folded into small size and placed in the mouth and chewed with the nuts which are already in the mouth. The number of leaves used varies, but on the average a person may use from three to five leaves at a time. This form of chewing thus consists only of betel nuts, betel leaves and lime. Some use various other ingredients during the process of chewing; with cured nuts, people who like the sweet taste may use pieces of

copra, cardamom seeds, cloves, nutmeg and mace; the astringent loving ones use kath and cardamom seeds. There is no hard and fast habit in these usages; one may use only cardamom seeds with pan; or only cloves. They often depend on the economic condition of the users, as the ingredients, unlike pan, depend on the buying power of the users.

Various kinds of pan boxes are used in northern India to keep these pan trinities and their ingredients. These are of various shapes, and often exquisitely ornated. They are mostly made of brass and are divided into compartments where the ingredients are placed. The boxes are circular, with the compartments radiating, or rectangular; often they are two-storied, the upper story, which has compartments, is fitted into the lower one; this upper one can be lifted out. The lower story, without compartments, contains the nuts and often a small nut slicer.

In southern India, the pan is offered on special plates; in rich families on silver plates. The betel leaves are arranged on the plates, the nut mixture is placed in a silver cup or in a glass bottle which is placed to one side, with the lime in a small glass container or on a betel leaf; the plate is then placed before the guests and relatives after the meals.

2. Nut mixtures (*pudi-adike*). The nut mixtures also differ in their ingredients depending on whether cured nuts or raw nuts are used. Further, they differ in the number of ingredients, aroma and freshness, depending on whether they are prepared by the housewife for home use or are commercial products, and also on the buying capacity of the user.

Cured nut mixtures. An average middle class well-to-do family uses a nut mixture prepared in the following way. Generally half nuts are broken into coarse pieces.

To these grated copra, grated nutmeg, crushed cardamom seeds, broken pieces of cloves, broken mace, tiny pieces of cardamom or cassia bark and saffron are added and mixed well. The fresh grated copra gives a fatty coating to the whole mixture and increases the aroma. Crystals of sugar are then added. This mixture is always kept in air-tight bottles to preserve its freshness. Occasionally a very small quantity of camphor may be added to increase the smell. The same kind of mixture, sometimes varying in ingredients, is prepared by small firms, or restaurants, or pan shops for use in beedas; or for use after a meal; often the mixture may further be scented with amber or other resins. The mixture is placed in small paper packages (each package contains a small spoonful of mixture) and sold in the shops. Some restaurants keep these packages at the counters for the use of the customers after meals.

Raw nut mixtures. The raw nuts are sliced, and fennel seeds, caraway seeds, coriander seeds, cardamom seeds, and broken cloves are added to them. The number and kinds of seeds used vary very much in this mixture. In northern India, hotels and restaurants very commonly keep this mixture at the counter for the use of customers. Many who may not like to chew the leaves use this mixture.

3. Beeda. This is a commercial form of ready made pan quid sold in the pan shops, in bazaars, restaurants and hotels. There are two chief kinds of beedas, in many ways different in their preparation and in their ingredients; one common to northern India and the other common to southern India.

Northern India. Each beeda contains at least two leaves. The selected leaves are cleaned, the apex and

petioles are removed, and if the leaf is large, it is split into two parts. The cleaned leaves are placed on the palm of the left hand, one above the other with the dorsal surface upward; a dash of lime is applied to it by means of a quill, and one or two dashes of kath, then some pieces of sliced raw nuts are placed in the center; a few seeds of cardamom are added, then the edges of the leaves are folded over and a clove is stuck in to hold the edges in place. It thus becomes a sort of inflated, slightly irregular-looking square. The beedas are kept arranged in trays with wet clothes to prevent drying off. They are astringent and often bitter depending on the amount of kath used. On account of the raw nuts and the kath, if this pan is taken for the first time by one unaccustomed to it, one may experience the choking effect and all the other undesirable features attributed to pan by writers. High grade beedas are often covered with silver or gold leaf.

Southern India. In southern India, tender leaves are selected for beeda, and each beeda contains at least two leaves. The apex and petiole and to some extent the mid-rib are removed, and a thin layer of one or two spots of lime is applied to the dorsal surface. A spoonful of nut mixture (consisting of cured half nuts broken into small pieces and mixed with grated copra, grated nutmeg, pieces of mace, crystals of sugar, cardamom seeds and saffron) is then added to the leaves which are rolled into a cone; the edges of the cone are pushed in and stuck with a clove. These cone-like rolls are placed in wire loops which are so arranged as to look like a green flower bouquet; or are placed in plates arranged in a pyramidal shape. These beedas are sweetish, aromatic and tasty. Anyone can eat them whether or not for the first time or by one unaccustomed to pan. There is no

astringency or bitterness in these quids. This is a very common form of pan, chewed in southern India by non-habituals, who eat it only for its taste and smell. These are all commercial forms, but most families prepare their own nut mixture and buy fresh leaves almost every day. The home-made pan in southern India is something one must taste to know what pan is really like.

4. Scented nuts. For this purpose only cured nuts are used. Half nuts are scented with amber, camphor, resins and other ground spices. These scented half nuts are each packed in paper, like lemon drops or peppermints, to keep the freshness of the nut. The half nuts are sometimes broken into two or three pieces and scented with a ground mixture, as before, of amber, camphor, resins and other spices, and to this, shelled melon seeds are sometimes added.

b. Habitual chewing

In this form of chewing, indulged in for its own effect or for the narcotic effect of the tobacco, mostly the lower grades of nuts and leaves are used. In the majority of cases, it is the poorer classes of people who have this habit. For use with tobacco, the cured nut mixture, the southern Indian beeda, and scented nuts are not utilized, not only for economic reasons, but because they do not produce any narcotic effects. The northern Indian beeda and raw nuts and also their *masala*, however, are very well suited for this kind of habitual chewing and for the use with tobacco. Ripe seeds and coarse leaves are better adapted, since fibrous leaves and ripe seeds give a coarse base and the bulk required to keep the tobacco in the mouth. It is exactly the antithesis of the non-habitual chewing where tender leaves and cured nuts are required, so that they may be dissolved, so to say, in the mouth during

chewing. In this form of chewing, mostly pan trinity is used with tobacco. Tobacco is also mixed with some spices, as in *gundi* and *jharada*.

As in the plain pan chewing, the process is the same: first the nuts are placed in the mouth, followed by leaves; generally this class of chewers use more lime than the non-habitual chewers. After the nuts and leaves are chewed a little, they use the kind of tobacco to which they are addicted; some people prefer the rashed rhizome of *Smilax calophylla*.

c. Ceremonial Utilization

To attempt to write about the ceremonial uses of betel nut and betel leaves in India in this paper may be likened to an attempt to write the cultural history of the people of India in one sentence. There is no ceremony, there is no occasion, there is not a day in an Indian's life where the pan does not play its part. The happiest part of honeymoons, the happiest part of married life is spent over pan. The young couples, on the day's work well done, retreating to their seclusion after meals, talk out their hearts and pour out their affection while the bashful young wife prepares pan quid with selected leaves. The parents, in Indian families, plan out and discuss the day's outcome of work, the family affairs, children, their education, over pan; while children cluster about grandmother to hear fairy stories at leisure over her pan.

Indian families, as a class, abhor anything narcotic, anything alcoholic, and regard them as degrading to the human soul. Even the pan, which has no narcotic effect, is not allowed to be used by children or youths at a tender age.

d. Medicinal Utilization

Betel nuts. Medically they are chiefly used in veteri-

nary practices as a vermifuge for tapeworms. Of all the alkaloids in the nut, it is only arecoline which has toxic properties. The juice of tender nuts is reported to act as a laxative when given in small doses. This decoction, in conjunction with other drugs, is used for costiveness and dyspepsia. The burned nut is said to be used as a dentifrice. A strong decoction of the ripe seeds is also used for dyeing red and black shades.

Betel leaves. The essential oils from betel leaves are used in treating catarrhal affections, inflammations of the throat, larynx and bronchi; they exert an antiseptic action, and also can be used with advantage in diphtheria. The juice of fresh leaves is diluted and given as a dose when the oils are not readily obtainable. The fresh juice, mixed with lime, is applied to the throat in glandular inflammation. Many ayurvedic medicinal pills are administered with the fresh juice of betel leaves. The leaf is smeared with oil, warmed and applied as a poultice to sores.

ECONOMIC IMPORTANCE OF THE PALM

The betel nut palm is one of the most important economic plantation crops. The amount of nuts used in India alone give some idea of its importance. It may be safely said that about eight to ten million dollars worth of nuts are used annually in India. She imports, besides her own production, over 56,000 tons of betel nuts, and absorbs almost all the surplus of the major betel-nut producing countries like Ceylon, Straits Settlements, Indonesia, etc.

As in the case of tobacco, coffee and tea, the betel nuts are also taxed and the government gets considerable revenue out of the nuts. There are areca nut merchant associations in plantation areas to safeguard the plantation interests and to regulate production and disposal of the

nuts. But there are a considerable number of small patches of palms, grown near tanks and river sides for family use or for catering to a group of villages, which seldom come under statistics. Precise figures of acreage under the palm are thus difficult to obtain. The statistics regarding the actual acreage, total production, etc., are incomplete; the figures often given in journals and books must be taken with large margins. It is often noted that the acreage for India and Burma is as follows:

Bombay State (Province)	22,700 acres
Madras “ “	108,600 “
Mysore “ “	34,500 “
Ceylon	68,500 “
Burma	30,750 “

Bengal and Assam State (Province) greater acreage than any other states (no definite figures).

The net profit per acre is not very high. It is stated to be just over Rs. 100 per acre—an acre holds from 1,000 to 1,500 palms; each palm on the average yields about 250–300 nuts; often the annual yield per acre is up to 300 cwts. However, the yield of cured high-grade nuts is much less; in Mysore, it is stated to be only 7 cwts. per acre. The prices vary very much according to the grades from Rs. 50 to Rs. 8 per cwt.; the difference of prices between first grade quality to inferior is often as high as 5 to 1.

CONCLUSION

The use of pan in India has remained unchanged for centuries (except for the impact of tobacco on pan as a new form of chewing). Many of the conventional uses of pan are remembered only through practice and are handed down from parents to children. Pan is chiefly used for chewing or for social purposes, rather than as a

narcotic or a drug. Of all the masticatories, fumatories and liqueurs, the use of the pure form of pan is definitely an innocent and harmless practice.

PLANTS ASSOCIATED WITH PAN

In each case the scientific name and family and the part of the plant utilized is indicated, together with the English and vernacular names.

a. Plants associated with chewing

1. **Areca Catechu L.** Palmaceae
Seeds (hemicellulose endosperm).
English: *Betel nut*, *Areca nut*; Sanskrit: *Gurvaca*; Hindustani and Persian: *Supari*; Malayan and Chinese: *Pinang*; Kannada, etc: *Adike*.
2. **Piper Betle L.** Piperaceae
Leaves.
English: *Betel pepper*, *Betel leaves*; Sanskrit: *Tambul*; Hindustani: *Pan*.
3. **Syzygium aromaticum (L.) Merr. & Perry**
Myrtaceae
Dried unopened flower buds.
English: *Clove*; Sanskrit and Kannada: *Lavang*.
4. **Elettaria Cardamomum (L.) Maton** Zingiberaceae
Seeds.
English: *Lesser Cardamom*; Sanskrit: *Upakunchica*; Kannada: *Elakki*.
5. **Amomum subulatum Roxb.** Zingiberaceae
Seeds.
English: *Greater Cardamom*.
6. **Myristica fragrans Houtt.** Myristicaceae
The seed and seed-cover (nutmeg and mace).

English: *Nutmeg*; Sanskrit: *Jaiphal* (Nutmeg);
Sanskrit: *Jatri* (Mace).

7. **Cocos nucifera L.** Palmaceae

Dried kernel (copra).

English: *Coconut*; Sanskrit: *Nariyal*; Kannada:
Tengu.

8. **Cinnamomum zeylanicum Breyn.** Lauraceae
Bark.

English: *Cinnamon*; Kannada: *Darchini*, *Dal-
chini*.

9. **Cinnamomum Cassia (Nees) Nees ex Blume**
Lauraceae
Bark.

10. **Cinnamomum Camphora (L.) Nees & Eberm.**
Lauraceae

Camphor obtained from the distillation of the
wood and leaves.

English: *Camphor*; Kannada: *Karpura*.

11. **Dryobalanops aromatica Gaertn. f.** Dip-
terocarpaceae

Camphor obtained from the distillation of the
wood.

English: *Borneo Camphor*.

12. **Aquilaria Agallocha Roxb.** Thymelaeaceae
Resins.

13. **Crocus sativus L.** Iridaceae

Dried stigmas and styles of the pistil. Fairly com-
mon in use.

English: *Saffron*; Sanskrit: *Kesar*; Kannada:
Kesari, *Kumkumkesari*.

14. **Pimpinella Anisum L.** Umbelliferae
Dried fruits.

English: *Anise*; Sanskrit: *Muhuri*; Kannada: *Dodda-jirige*.

15. **Foeniculum vulgare** *Miller* Umbelliferae
Dried fruits.
English: *Fennel*; Hindustani: *Pan-muhori*;
Kannada: *Saunf, Sonp*.
16. **Carum Carvi** *L.* Umbelliferae
Dried fruits.
English: *Caraway*; Hindustani: *Mita zerah*.
17. **Carum Bulbocastanum** *Koch* Umbelliferae
Dried fruits.
English: *Black caraway*; Hindustani: *Shah-zerah*
18. **Cuminum Cyminum** *L.* Umbelliferae
Dried fruits.
English: *Cumin*; Sanskrit: *Zira, jira*; Kannada: *Jirige*.
19. **Nigella sativa** *L.* Ranunculaceae
Dried fruits.
English: *Black cumin*; Hindustani: *Kala Zerah*;
Kannada: *Karijirige*.
20. **Anethum graveolens** *L.* Umbelliferae
Dried fruits.
English: *Dill*; Sanskrit: *Misreys, Satapushpa*.
21. **Coriandrum sativum** *L.* Umbelliferae
Dried fruits.
English: *Coriander*; Hindustani: *Dhanya*; Kan-
nada: *Kothamburi*.
22. **Smilax calophylla** *Wall.* Smilacaceae
Rhizome.
23. **Tamarindus indica** *L.* Leguminosae
Young leaves (rarely used).

English: *Tamarind*; Hindustani: *Amlī*; Kannada: *Hunise*.

24. **Uncaria Gambir** (*Hunt.*) *Roxb.* Rubiaceae
Wood extract, Kath.
English: *White cutch*, *Gambier*.

25. **Acacia Catechu** *Willd.* Leguminosae
Wood extract, Kath
English: *Catechu*; Hindustani: *Kath*; Kannada: *Kachu*.

26. **Saccharum officinarum** *L.* Gramineae
Sugar from juice (stem).
English: *Sugar cane*; Hindustani: *Ganna*; Kannada: *Kabbu*.

27. **Beta vulgaris** *L.* Chenopodiaceae
Sugar from juice.
English: *Sugar beet*.

28. **Cucumis Melo** *L.* Cucurbitaceae
Shelled seeds.
English: *Melon*.

29. **Nicotiana Tabacum** *L.* Solanaceae
Leaves and stalk.
English: *Tobacco*; Hindustani: *Tombacu*; Kannada: *Hogesoppu*.

30. **Nicotiana rustica** *L.* Solanaceae
Leaves and stalk.

b. Plants associated with the preparation of pan

1. **Syzygium Cumini** (*L.*) *Skeels* Myrtaceae
Fresh bark; used in the curing of betel nuts.
English: *Black plum*; Hindustani: *Jambul*;
Kannada: *Nerale*.

2. **Pterocarpus santalinus L.** Leguminosae
Fresh bark; used in the curing of betel nuts.
English: *Red sandalwood*; Bengali: *Rukto-chandan*; Hindustani: *Chandan*; Kannada: *Gandham*, *Kempugandha chekke*.
 3. **Ficus religiosa L.** Moraceae
Fresh bark; used in the curing of betel nuts.
English: *Pipal*; Sanskrit: *Asvattha*; Kannada: *Aswat*, *Arali*.
 4. **Sesamum indicum L.** Pedaliaceae
Oil from seeds; used in the curing of betel nuts.
English: *Sesame*; Hindustani: *Til*; Kannada: *Allu*.
 5. **Saccharum officinarum L.** Gramineae
Gur (jaggary) made from juice; Gur is used in the curing of betel nuts, and in several kinds of chewing tobacco preparations.
- c. Plants associated with the cultivation of pan
1. **Sesbania aculeata Pers.** Leguminosae
Tree serves as a supporter for the betel vine.
Bengali: *Jayanti*, *Jiluga*.
 2. **Sesbania grandiflora Pers.** Leguminosae
Tree serves as a supporter for the betel vine and as a shade tree.
Kannada: *Agase*.
 3. **Sesbania aegyptica Pers.** Leguminosae
Serves for support and shade for the betel vine.
Hindustani: *Saora*.
 4. **Moringa oleifera Lam.** Moringaceae
Serves for support and shade for the betel vine.
Kannada: *Nugge*.

5. **Erythrina indica** *Lam.* Leguminosae
Serves for support and shade for the betel vine.
Hindustani: *Pangra*.
6. **Boswellia serrata** *Roxb.* Burseraceae
Stems used as poles to support the betel vine.
Hindustani: *Salei*.
7. **Euphorbia Tirucalli** *L.* Euphorbiaceae
Used for windbreaks and as a fence for the vineyard.
Kannada: *Kolu kalli*.
8. **Protium sp.** Burseraceae
Used for windbreaks and as a fence for the vineyard.
Kannada: *Konda mavu*.

d. Plants grown with pan

All are grown for their economic importance either intermingled or as a fringe plant in areca palm and betel pepper gardens or plantations.

1. **Cocos nucifera** *L.* Palmaceae
2. **Musa paradisiaca** *L.* Musaceae
English: *Plantain*; Hindustani: *Kela*; Kannada: *Bale*.
3. **Musa paradisiaca** *L.* subsp. **sapientum** (*L.*)
O. Ktze. Musaceae
English: *Banana*
4. **Mangifera indica** *L.* Anacardiaceae
English: *Mango*; Kannada: *Mavu*.
5. **Citrus aurantifolia** (*Chr.*) *Swegl.* Rutaceae
English: *Lime*; Hindustani: *Nimbu*.

6. **Citrus medica L.** Rutaceae
English: *Citron*.
7. **Citrus Limon (L.) Burm.** Rutaceae
English: *Lemon*.
8. **Citrus grandis (L.) Osbeck** Rutaceae
English: *Pomelo*; Kannada: *Chakkota*.
9. **Citrus sinensis (L.) Osbeck** Rutaceae
English: *Orange*.
10. **Syzygium Jambos (L.) Alston** Myrtaceae
English: *Rose apple*; Kannada: *Pannerale*.
11. **Psidium Guajava L.** Myrtaceae
English: *Guava*; Kannada: *Cheape*.
12. **Punica Granatum L.** Punicaceae
English: *Pomegranate*; Kannada: *Dalimbre*.
13. **Michelia Champaca L.** Magnoliaceae
English and Hindustani: *Champaca*; Kannada: *Sampig*.
14. **Artocarpus heterophyllus Lam.** Moraceae
English: *Jackfruit*; Kannada: *Halasu*.
15. **Artocarpus altilis (Park.) Fosberg** Moraceae
English: *Breadfruit*.
16. **Anacardium occidentale L.** Anacardiaceae
English: *Cashew*; Kannada: *Geru, Godumbi*.

e. Plants used as catch-crops

17. **Zingiber officinale Rosc.** Zingiberaceae
English: *Ginger*; Kannada: *Shunti*.
18. **Curcuma longa L.** Zingiberaceae
English: *Turmeric*; Kannada: *Harisina*.

19. **Manihot esculenta** *Crantz* Euphorbiaceae
English: *Cassava*; Kannada: *Maragenasu*.
20. **Ruta graveolens** *L.* Rutaceae
English: *Rue*.

Many other economic plants of short duration are also grown.

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